

REMARKS

By this paper, Applicant has amended Claims 1, 2, 3, 82, 89, 93, and 99. Claims 100 – 104 are canceled. Hence, Claims 1-25, 31, 33, 37-39, and 82-99 remain pending and are presented for further examination.

I. Rejections of Claims 1 – 25, 31, 33, 37- 39, and 82 -104 under 35 U.S.C. § 103

On pages 3 - 45 of the Office Action, the Examiner rejected Claims 1-25, 31, 33, 37-39 and 82-104 as anticipated under 35 U.S.C. § 103(a) by the publication “Personal Computer System for ECG Recognition in Myocardial Infarction Diagnosing Based on an Artificial Neural Network,” to Elias (hereinafter “Elias”) in view of other prior art references. For the reasons set forth below, Applicant respectfully submits that Claims 1- 25, 31, 33, 37 – 39, and 82-99 are patentable.

A. Discussion of Rejection of Independent Claims 1, 31, 82, 89, 93, and 99

On pages 3 - 45 of the Office Action, the Examiner rejected Claims 1, 2, 31, 33, 37, 39, 82, 85, 87-89, 93, and 99 as anticipated under 35 U.S.C. § 103(a) by Elias in view of U.S. Patent Publication 20050236004 to Magnuson (hereinafter “Magnuson”). For the reasons set forth below, Applicant respectfully submits that Claims 1, 2, 31, 33, 37, 39, 82, 85, 87-89, 93, and 99 are patentable.

a. Discussion of Rejection of Independent Claims 1, 82, 89, 93 and 99 under U.S.C. § 103

On page 3 of the Office Action, the Examiner rejected Claim 1 under § 103(a) as being unpatentable over the combination of Elias in view of Magnuson. Claim 1, as amended, recites a method of detecting medical events in a medical instrument, comprising: “reconfiguring a neural network stored in the medical instrument based on the at least one training case of the particular patient, wherein reconfiguring the predictive model comprises adding a node indicative of the at least one training case.” The Examiner indicated that Elias “does not teach reconfiguring a neural network stored in the medical instrument based on the at least one training case of a particular patient.” *Office Action* at page 3. However, the Examiner took the position that Magnuson teaches “reconfiguring a neural network stored in the medical instrument based on the at least one training case of a particular patient.” *Office Action* at page 3. The Examiner further

stated that “[r]econfiguring a neural network of applicant is equivalent to ‘first principle model (FPM I)’ on a ‘non-linear model’ of Magnuson.” *Office Action* at page 3. The Examiner references Magnuson paragraphs [004], [0035], and [0044]; however none of these cited paragraphs teach or render obvious “reconfiguring a neural network stored in the medical instrument” as stated in Applicant’s Claim 1. Rather, Magnuson discloses “that the model can continually be trained with updated data to more fully refine the model and more fully define the stored representation.” *Magnuson*, para. [0040]. “Thus the neural network is trained on this time series of data inputs output by each of the first principles models and also the time series associated with the measurable variables and the external inputs.” *Magnuson*, para. [0046]. Applicant submits that these and other portions of Magnuson do not disclose “reconfiguring a neural network stored in the medical instrument based on at least one training case” (emphasis added) as recited in Claim 1 but merely disclose training a neural network using data from a particular human body. *Id.*, para. [0044]. In contrast, Claim 1 recites, “reconfiguring a neural network stored in the medical instrument based on the at least one training case of the particular patient, wherein reconfiguring comprises adding a node indicative of the at least one training case” (emphasis added). Desirably, according to one embodiment, a stored neural network can be reconfigured based on a single training case of the particular patient and not the full data set.

In discussing similar features of Claim 31, the Examiner takes the position that “[a]dding a first pattern layer’ of applicant is equivalent to inserting one of the ‘first pattern model [sic] (FPM I)’ of Magnuson.” *Office Action*, at 6. However, Applicant submits that nowhere does Magnuson disclose a first pattern model. *See generally*, Magnuson. Rather, FPM in Magnuson stands for ‘First Principle Model’ and not ‘First Pattern Model’. *Magnuson*, para. [0043]. Further, Applicant submits that nowhere does Magnuson disclose reconfiguring a first principle model based on a training case nor does Magnuson disclose adding a first principle model indicative of a training case. Rather, Magnuson discloses embodiments that include multiple models and that a first principle model can be replaced by another model but fails to disclose reconfiguring those models, and in particular, fails to disclose “wherein reconfiguring comprises adding a node indicative of the at least one training case” as recited by Claim 1, as amended. *See, e.g., Magnuson*, Figures 10 and 14, para. [0044]. Applicant submits that Elias also fails to disclose such features (and the Examiner does not so argue). Accordingly, Applicant submits

that Elias and Magnuson, alone or in combination, also fail to teach or render obvious "reconfiguring the network comprises adding a node indicative of the at least one training case" as recited by Claim 1 as amended. As Elias and Magnuson fail to teach or render obvious the features discussed above with reference to Claim 1, as amended, and, hence, Claim 1 is patentable in view of the cited references.

Similarly, Claim 82 recites "identifying a portion of the signal that is indicative of a medical event of the particular patient based on user input" and "reconfiguring a predictive model stored in a memory of an electronic device for identifying a subsequent medical event of the particular patient based on an additional biomedical signal of the patient, wherein reconfiguring the predictive model comprises adding a node indicative of the at least one training case." Claim 89 recites a system comprising a processor configured to "reconfigure the stored neural network based on the at least one training case of the particular patient, wherein the processor is configured to reconfigure the neural network by adding a node indicative of the at least one training case." Claim 93 recites a system comprising a processing means configured to "reconfigure the stored neural network based on the at least one training case of the particular patient, wherein reconfiguring the network comprises adding a node indicative of the at least one training case." Claim 99 recites "reconfiguring a neural network stored in the medical instrument based on the at least one training case of the particular patient, wherein the processing means is configured to reconfigure the neural network by adding a node indicative of the at least one training case." Applicant submits that Elias and Magnuson, alone or in combination, also fail to teach or render obvious these features for at least the same reasons discussed with reference to Claim 1. Accordingly, Applicant submits that each of Claims 82, 89, and 99, as amended, are patentable in view of Elias and Magnuson.

b. Discussion of Rejection of Independent Claim 31

On page 3 of the Office Action, the Examiner rejected Claim 31 as being unpatentable over the combination of Elias in view of Magnuson. The Examiner asserts that it "would have been obvious to a person having ordinary skill in the art at the time of Applicant's invention to modify the teachings of Elias by using a weights matrix as taught by Magnuson to reconfiguring the neural network to correctly classify the first training case without retraining the neural network wherein reconfiguring the detection module further comprises adding a first pattern layer node to the neural network based on the first training case." *Office Action* at 6.

The Examiner states that Elias “does not teach reconfiguring the neural network to correctly classify the first training case without retraining the neural network wherein reconfiguring the detection module further comprises adding a first pattern layer node to the neural network based on the first training case.” *Office Action* at 6. However, the Examiner argues that Magnuson teaches “reconfiguring the neural network to correctly classify the first training case without retraining the neural network wherein reconfiguring the detection module further comprises adding a first pattern layer node on the neural network based on the first training case.” *Office Action* at 6.

Applicant submits that nowhere do Elias or Magnuson, alone or in combination, disclose reconfiguring as recited in Claim 31. In particular, Applicant submits that Magnuson instead merely discloses “that the model can continually be trained with updated data to more fully refine the model and more fully define the stored representation.” *Magnuson*, para. [0040]. The Examiner points to paragraphs [0035] and [0044] of Magnuson as disclosure of “reconfiguring the neural network to correctly classify the first training case without altering the weights in retraining the neural network wherein reconfiguring the detection module further comprises adding a first pattern layer node to the neural network based on the first training case.” However, Magnuson discloses training a network via backward propagation which necessarily include adjusting the weights in the neural network. *Magnuson*, para.s [0037] and [0042]. Applicant submits that Elias also fails to disclose such features (and the Examiner does not so argue). Thus, nowhere does Elias or Magnuson, alone or in combination, disclose or render obvious training a neural network by “reconfiguring the neural network to correctly classify the first training case *without altering the weights* in retraining the neural network” as recited in Claim 31 (emphasis added). Further, as discussed above with reference to Claim 1, neither Elias nor Magnuson, alone or in combination, disclose or render obvious “adding a first pattern layer node to the neural network based on the first training case” as recited in Claim 31. Accordingly, Applicant submits that Claim 31, as amended, is patentable in view of Elias and Magnuson.

II. Rejections of Claims 3-25, 38, 83, 84, 90-92, and 94-98 under 35 U.S.C. § 103(a)

On pages 22-45 of the Office Action, the Examiner rejected Claims 38, 83, 84, 86, 90-92, and 94-98 under 35 U.S.C. § 103(a) as being rendered obvious by Elias in combination with

Appl. No. : 10/830,177
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other references. However, each of Claims 38, 83, 84, 86, 90-92, and 94-98 depends from one of Claims 1, 31, 82, 89, or 93, or 99, the Applicant submits that each of those claims is patentable for at least the same reasons discussed above with reference to Claims 1, 31, 82, 89, 93 and 99.

III. Conclusion

Applicant has endeavored to address all of the Examiner's concerns as expressed in the Office Action. Accordingly, amendments to the claims, the reasons therefore, and arguments in support of patentability of the pending claim set are presented above. Any claim amendments which are not specifically discussed in the above remarks are made in order to improve the clarity of claim language, to correct grammatical mistakes or ambiguities, and to otherwise improve the clarity of the claims to particularly and distinctly point out the invention to those of skill in the art. Finally, Applicant submits that the claim limitations above represent only illustrative distinctions. Hence, there may be other patentable features that distinguish the claimed invention from the prior art.

Although the present communication may include alterations to the application or claims, or characterizations of claim scope or referenced art, the Applicants are not conceding in this application that previously pending claims are not patentable over the cited references. Rather, any alterations or characterizations are being made to facilitate expeditious prosecution of this application. The Applicants reserve the right to pursue at a later date any previously pending or other broader or narrower claims that capture any subject matter supported by the present disclosure, including subject matter found to be specifically disclaimed herein or by any prior prosecution. Accordingly, reviewers of this or any parent, child or related prosecution history shall not reasonably infer that the Applicants have made any disclaimers or disavowals of any subject matter supported by the present application.

In view of the foregoing, Applicant respectfully requests reconsideration and withdrawal of the outstanding rejections and, particularly, that all claims be allowed. If the Examiner finds any remaining impediment to the prompt allowance of these claims that could be clarified with a telephone conference, the Examiner is respectfully invited to call the undersigned.

Appl. No. : 10/830,177
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Please charge any additional fees, including any fees for additional extension of time, or credit overpayment to Deposit Account No. 11-1410.

Respectfully submitted,

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